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The seven hundred and ninetieth Meeting of the Club was held in collaboration with the West African Ornithological Society in the Ante Room, Sherfield Building, Imperial College, London SW7 on Tuesday, 26 September 1989 at 7 pm., 35 members and 21 guests attended.

11 Members of both the Club and WAOS (marked * below) were present.

J. H. ELGOOD*, *Vice-Chairman of the Club and Vice-President of WAOS was in the Chair.*

Members of the Club present were: Dr G. MOREL*, (*President, WAOS*), M. A. ADCOCK, Dr J. S. ASH, B. H. BECK, R. BEECROFT*, Mrs D. M. BRADLEY, Dr J. BYNON, D. R. CALDER, I. D. COLLINS*, Dr H. CRICK*, S. J. FARNSWORTH*, B. GRAY, D. GRIFFIN, C. A. R. HELM, P. HOGG, T. J. JAMES, M. C. JENNINGS, R. KETTLE, Dr P. LACK, I. T. LEWIS, Revd. G. K. McCULLOCH, Dr J. F. MONK*, Mrs A. M. MOORE*, R. G. MORGAN, Mrs M. MULLER, P. A. PRINCE, V. J. SAWLE, Dr R. C. SELF, R. E. SHARLAND*, N. J. SKINNER*, N. H. F. STONE, Lt-Col. T. C. WHITE, Dr R. WILKINSON*, A. P. ZIEGLER.

Other Members of WAOS present were: C. S. BALCHIN, R. DEGAUQUIER, HE. M. E. J. GORE, Dr M-Y. MOREL, B. PEARSON.

Guests present were: Mrs B. H. ADCOCK, C. BELL, Mrs BRUCE-LOCKHART, Professor T. BYNON, Mrs J. B. CALDER, L. CLARKE, Miss J. EDRIKH, Mrs F. FARNSWORTH, Mrs GRIFFIN, Miss C. HOFF, Mrs I. McCULLOCH, P. J. MOORE, C. A. MULLER, Mrs A. NASON, R. RANFT, Miss D. RIDGLEY.

After supper Roger Beecroft gave an address on "Birds of the Sahara", an interesting account of a journey made from October to December in 1988 across the Sahara Desert from Algeria to the northern border of Nigeria and back again. He illustrated his description with slides showing the varied terrain of the journey and presented data of migrating and wintering birds which had been collected *en route*.

The relationships and taxonomy of the Fijian parrot genus *Prosopeia**

by Dieter Rinke

Received 28 January 1989

Based on the specimens collected by the Whitney South Seas expedition, Amadon (1942) revised the taxonomy of the Fijian parrot genus *Prosopeia*. Two species were recognized: The Masked Shining Parrot, *P. personata*, which is monotypic (the 'green *Prosopeia*'), and the Red Shining Parrot *P. tabuensis*, which he split into 5 subspecies: *splendens*, *tabuensis*, *koroensis*, *atrogularis* and *taviunensis* (the 'red *Prosopeia*'). While *splendens* is characterized by its crimson colour, the maroon populations of *P. tabuensis* were distinguished by combinations of the following characters: size, occurrence and extension of a blue nuchal collar, and the amount of red feather tips on the rump. Amadon's taxonomy was accepted in subsequent treatments of either parrots (Forshaw 1973) or Fijian birds (Mayr 1945,

*This is publication No. 1 from the Brehm Fund South Seas Expedition.

duPont 1976, Watling 1982, Clunie 1984). Wolters (1975–82) resurrected Mathews' genus *Layardiella* for *tabuensis*, but this was not accepted by most authors.

The arrangement of the taxa within the order Psittaciformes is as yet controversial; apparently, no satisfactory classification exists. Smith (1975) and, to a lesser extent, Homberger (1980) provide an assessment of those characters which were thought to be of significance for a phylogenetic arrangement of the parrots, but most of them do not seem to reveal relationships.

The genus *Prosopeia* exemplifies these taxonomic difficulties. Brereton (1963) presented a somewhat curious taxonomy for the family Psittacidae to encompass the genera *Poicephalus*, *Psittacus* (both from Africa); *Coracopsis* (from Madagascar), *Psittichras* (from New Guinea) and *Prosopeia*. Most authors suggest there is a close relationship between *Prosopeia* and the king-parrot group (especially to *Alisterus*), both being included either in the platycercine or psittaculine assemblages (review in Homberger 1980). Amadon (1942) considered merging *Prosopeia* with *Alisterus*, but refrained until the taxonomic significance of the carotid formula was proved. Homberger (1980) differs from all other authors in clearly separating *Prosopeia* (as platycercine) from *Alisterus* (as psittaculine). Mayr (1939: 203), interestingly, supposed a Papuan origin of the genus *Prosopeia*, while later, in his treatment of eastern Polynesian birds, he stated: "The case of *Cyanoramphus* is puzzling; the genus may have had a much wider distribution in Polynesia, and *Prosopeia* may be a specialized remnant of this stock" (1939: 209).

The first part of this paper deals with the relationships of *Prosopeia* in the light of primitive and derived plumage characters, and of biogeographical data. In the second part, the genus *Prosopeia* is revised on the basis of traditionally used morphological characters within the genus, taking into consideration past and present distributional patterns.

Methods

I studied a total of 217 *Prosopeia* specimens in the American Museum of Natural History (AMNH) in New York, the British Museum (Natural History) (BMNH) in Tring, the Senckenberg-Museum (SM) in Frankfurt and the Zoologisches Forschungs-Museum Alexander König (ZFMK) in Bonn. Data on some *atroregularis* specimens have been provided by W. Boles from the Australian Museum (AM) in Sydney. In addition, plumage characters and measurements from a few live birds from 'Eua, Tonga, were recorded during my field studies.

Plumage characters were noted for every specimen, and the following *measurements* taken: length of the folded right wing, width of the upper mandible at the base of the bill, and exposed culmen. The exposed culmen data were not, in fact, evaluated because of high variability within populations, probably due to abrasion independent of age; 'exposed culmen' is not a useful character in parrot systematics. Tail length was equally ignored, due to high variability resulting from seasonal wear. Forshaw (1973) showed that tarsus length in *Prosopeia* does not reveal interpopulation differences, so this too was ignored.

TABLE 1

Morphometric data of *Prosopeia* populations (WL = wing-length; WM = width of upper mandible; n = number of specimens; s.l. = significance level for female-male differences)

	FEMALES			MALES			s.l.
	means \pm s.d.	range	n	means \pm s.d.	range	n	
WL (<i>tabuensis</i>)	23.25 \pm 0.46	22.0–24.1	24	24.42 \pm 0.70	23.5–25.6	30	P < 0.001
WM (<i>tabuensis</i>)	16.17 \pm 0.61	15.1–17.3	24	18.53 \pm 0.39	17.7–19.2	32	P < 0.001
WL (<i>koroensis</i>)	22.35 \pm 0.72	21.6–23.6	6	22.91 \pm 0.51	22.4–23.9	12	n.s.
WM (<i>koroensis</i>)	16.03 \pm 0.47	15.3–16.5	6	18.73 \pm 0.48	18.0–19.4	12	P < 0.001
WL (<i>atroregularis</i>)	21.96 \pm 1.22	20.7–24.2	8	24.02 \pm 1.14	22.6–25.7	13	P < 0.001
WM (<i>atroregularis</i>)	16.01 \pm 0.33	15.7–16.5	8	18.12 \pm 0.47	17.0–18.8	15	P < 0.001
WL (' <i>tabuensis</i> ')	22.84 \pm 0.89	20.7–24.1	38	23.99 \pm 0.98	22.4–25.7	55	P < 0.001
WM (' <i>tabuensis</i> ')	16.12 \pm 0.53	15.1–17.3	38	18.48 \pm 0.47	17.0–19.4	57	P < 0.001
WL (<i>taviunensis</i>)	20.06 \pm 0.50	19.1–20.8	16	21.50 \pm 0.62	20.4–22.9	12	P < 0.001
WM (<i>taviunensis</i>)	14.45 \pm 0.44	13.4–15.2	16	17.76 \pm 0.69	16.8–18.7	12	P < 0.001
WL (<i>splendens</i>)	21.51 \pm 0.62	20.2–23.0	24	22.94 \pm 0.71	21.5–24.2	29	P < 0.001
WM (<i>splendens</i>)	15.46 \pm 0.63	14.4–16.7	25	17.94 \pm 0.69	16.6–19.4	29	P < 0.001
WL (<i>personata</i>)	22.80 \pm 0.45	22.2–23.6	20	23.97 \pm 0.69	22.5–24.9	21	P < 0.001
WM (<i>personata</i>)	16.07 \pm 0.43	15.2–17.0	20	18.40 \pm 0.69	17.2–19.2	22	P < 0.001

'*tabuensis*' = *tabuensis*, *atroregularis* and *koroensis* evaluated jointly.

Small series of specimens of species supposedly close relatives of *Prosopeia* (i.e. *Eunymphicus*, *Cyanoramphus*, *Platycercus*, *Alisterus*, *Aprosmictus* and *Eclectus*) were similarly studied.

Relationships of the genus *Prosopeia*

External morphology

In parrots, a predominantly red plumage is a derived character which appeared independently: in *Ara*, *Eclectus*, *Alisterus* and *Platycercus* in the Psittacidae; in *Lorius*, *Eos*, *Chalcopsitta*, *Charmosyna*, *Vini* and *Trichoglossus* in the Loriidae. Green plumage is a primitive character, and hence, when assessing relationships on plumage characters, the more primitive green forms need to be compared.

P. personata, the most primitive member of the genus, closely resembles *Eunymphicus* (blackish face, blue primaries, yellowish-green colouration), but has no blue rump patch (a characteristic of all *Alisterus* and *Aprosmictus* specimens), nor a red upper mandible (present in *Aprosmictus* and *Alisterus* except in ♀ *A. scapularis*), and lacks the more emerald green overall colouration of *Aprosmictus*, ♀ *Alisterus* and ♂ *Eclectus*. In 'jizz' and colouration, *P. personata* resembles a larger version (island gigantism?) of *Eunymphicus cornutus uveaensis*. There is no evidence for a close relationship with *Alisterus*.

Sexual dimorphism in bill size is strongly marked in all populations of *Prosopeia* (Table 1) and significantly so in *Eunymphicus*, in *Platycercus elegans* and in most populations of *Cyanoramphus* ($P < 0.01$); but in *Alisterus*, in *Aprosmictus* and in *Eclectus* sexual dimorphism in bill size is not significant, if present at all.

Biogeography

King-parrots and related genera (e.g. *Alisterus*, *Aprosmictus* and *Polytelis*) show a strongly continental distribution pattern in those Australian and Papuan regions which have been repeatedly connected during the Pleistocene. Oceanic barriers between Australia and Timor (where *Aprosmictus jonquillaceus* occurs) and between New Guinea and the Maluku Islands (part of the range of *Alisterus amboinensis*) were either very narrow or not present during the periods of maximum glaciation. (The *Alisterus amboinensis* populations on the Peling Islands may have resulted from early human introductions.) King-parrots, however, have colonized neither the large islands to the north and east of New Guinea (i.e. New Britain, New Ireland, the Solomons) nor New Caledonia, despite the availability of the once large glacial land mass of the Bellona plateau. On the other hand, *Cyanoramphus* parakeets are known from widely scattered islands in the southwestern Pacific: from Lord Howe Island east to Tahiti, from Macquarie I. north to New Caledonia, though many populations are now extinct.

Of the Fijian avifauna, most species have their origin in the Papuan region (Mayr 1939, Watling 1982), having colonized Fiji eastward and southward via the Solomons, the Santa Cruz Islands and Vanuatu, and possibly the islands of the Pandora Bank (lying between the Santa Cruz Islands and Rotuma) during the ice ages. The Fijian derivatives of a Papuan stock are represented on these island groups by closely related forms, including even Fiji's distinctive endemics such as *Lamprolia victoriae*, *Trichocichla rufa* and the species of the '*Chrysoenas* group' of *Ptilinopus* fruit-doves. There is, however, no long-tailed parrot species on any island between New Guinea and Fiji.

This biogeographical evidence supports the conclusions just cited of the studies of external morphology that *Prosopeia* is more closely related to *Eunymphicus* than to *Alisterus*. It is the only New Zealand element in the resident Fijian avifauna.

The genus *Prosopeia* in Fiji and Tonga

Variation in the maroon populations

Within the genus *Prosopeia*, 3 distinct colour types exist: green in *personata*, crimson in *splendens*, and maroon in the remaining 4 forms (cf. Amadon 1942). Variation in plumage characters is only slight in *personata* and *splendens*.

In the maroon forms, which are at present distributed over one Tongan ('Eua) and 6 Fijian islands (Vanualevu, Kioa, Taveuni, Qamea, Koro and Gau), there is variation in size and in colouration of certain parts of the plumage, especially of the neck and rump. In size, the form from Taveuni and Qamea (*taviunensis*) is separable from the others, both sexes having significantly smaller wing-lengths (Table 1: $P < 0.01$). In width of the upper mandible, there are significant differences in females between *taviunensis* and each of Amadon's (1942) other 3 named forms of *tabuensis*, namely *koroensis*, *atroglularis* and *tabuensis*; in males differences are significant between *taviunensis* and both *tabuensis* and *koroensis* ($P < 0.01$; Table 1), but not *atroglularis*.

The subspecies *koroensis* (from Koro), *atroregularis* (from Vanualevu and Kioa) and *tabuensis* (from Gau and 'Eua) were originally distinguished principally on the amount of maroon tips to the rump feathers and on the occurrence and extent of a blue nuchal collar (Layard 1876a, Amadon 1942). All specimens examined from Koro have the rump feathers tipped with red, from a few feathers to about 50%, but not so extensively as noted by Amadon (1942). 10 of 24 specimens from Gau and 6 of 21 specimens from 'Eua have red—mostly very few—tips to the rump feathers. In 9 birds from Vanualevu and 7 from Kioa, the rump was without any red markings, but the samples are only small.

The blue nuchal collar is well developed in the birds from Vanualevu, but in the Kioa specimens it is narrow. Specimens from the other islands show much variation: birds from 'Eua and Gau may show no blue feathers or a fully developed blue collar, most specimens being between these extremes. Of the 18 Koro birds, 4 have some blue feathers in the hind-neck, one showing a narrow blue collar.

Excepting *taviunensis*, variation in width of the upper mandible and in wing-length within and between the maroon populations is slight; there are no significant differences between these 2 parameters. In Table 2, significant differences between different pairings of populations are marked. It is noteworthy that females from Koro⁴ have significantly longer wings than those from Vanualevu⁴, while in males⁵, this relation is reversed.

Mean wing-length in males from Kioa⁷ (22.78 mm) (which have been included in *atroregularis* by Amadon 1942), cluster with those from Koro⁵ (22.91 mm, to give a mean of 22.88 mm, with no increase in standard deviation when both populations are combined), rather than with those from Vanualevu⁷ (mean 24.17 mm and an increase in standard deviation—Table 2). Females are excluded due to too few single island data. If the data of all maroon forms except *taviunensis* (here indicated as '*tabuensis*') are evaluated jointly, the variation of bill-size is similar to that in the 2 other *Prosopeia* populations (e.g. *splendens* and *personata*), in both females and males. In wing-length, variation is about 1.5 times higher in '*tabuensis*' than in the other species (Table 1).

Assessment of variable characters

The red feather tips on the rump are probably of little taxonomic significance. Juveniles of some species of parrots (for example *Agapornis roseicollis*; pers. obs.) occasionally show red markings on some feathers, and these are replaced by green feathers during the first moult. A juvenile female Red Shining Parrot, which I kept in an aviary on 'Eua, was marked with red also on the lesser and median wing-coverts. The red feathers disappeared after the first moult.

Out of 9 specimens collected on 'Eua in August (which is during the breeding season, cf. Rinke in press), there was "... only a single specimen which has the uropygium uniform green; the others all show more or less red tips to the feathers, which in some are broad and very conspicuous; in two, also, the lesser and largest scapula-coverts have purplish-red tips" (Finsch 1877: 771). Finsch must previously have seen other specimens from 'Eua which probably had no red feather tips on the rump, as he

TABLE 2

Comparison of morphometric data (mm) of *tabuensis* specimens from single islands and from variously combined islands (number of specimens not given in Table 1 in brackets). Significance level ($P < 0.01$) between populations marked by identical superscript numbers.

Islands	Females	
	Wing length	width of upper mandible
'Eua	23.17 \pm 0.29 (13)	16.30 \pm 0.62 (13)
Gau	23.53 \pm 0.34 (11)	15.99 \pm 0.57 (11)
'Eua & Gau (<i>tabuensis</i>)	23.32 \pm 0.35 ^{1,3}	16.17 \pm 0.61
'Eua, Gau & Koro	23.12 \pm 0.59 (30)	16.14 \pm 0.58 (30)
Koro (<i>koroensis</i>)	22.35 \pm 0.72 ^{1,4}	16.03 \pm 0.47
Koro & Kioa	22.14 \pm 0.65 (8)	15.97 \pm 0.40 (8)
Kioa	21.73 \pm 0.06 (2)	15.83 \pm 0.16 (2)
Kioa & Vanualevu (<i>atroglularis</i>)	21.96 \pm 1.22 ³	16.01 \pm 0.33
Koro, Kioa & Vanualevu	22.13 \pm 1.02 (14)	16.02 \pm 0.38 (14)
Vanualevu	20.97 \pm 0.25 ⁴ (6)	15.93 \pm 0.32 (6)
all islands (' <i>tabuensis</i> ')	22.88 \pm 0.88	16.12 \pm 0.53

Islands	Males	
	Wing length	width of upper mandible
'Eua	24.33 \pm 0.56 (17)	18.63 \pm 0.42 (19)
Gau	24.78 \pm 0.69 (13)	18.41 \pm 0.30 (13)
'Eua & Gau (<i>tabuensis</i>)	24.54 \pm 0.65 ²	18.53 \pm 0.39
'Eua, Gau & Koro	24.11 \pm 0.94 (42)	18.59 \pm 0.42 (44)
Koro (<i>koroensis</i>)	⁵ 22.91 \pm 0.51 ^{2,6}	18.73 \pm 0.48
Koro & Kioa	22.88 \pm 0.45 (17)	18.64 \pm 0.50 (17)
Kioa	⁷ 22.78 \pm 0.13 (5)	18.35 \pm 0.48 (5)
Kioa & Vanualevu (<i>atroglularis</i>)	24.02 \pm 1.14 ⁶	18.12 \pm 0.47
Koro, Kioa & Vanualevu	23.48 \pm 1.04 (25)	18.41 \pm 0.56 (25)
Vanualevu	^{5,7} 24.17 \pm 0.74 (8)	18.10 \pm 0.20 (8)
all islands (' <i>tabuensis</i> ')	24.09 \pm 0.98	18.48 \pm 0.47

concluded: "The absence of red tips to the feathers of the lower rump or upper row of upper tail-coverts, . . . , is not a character of specific value in these birds" (Finsch 1877: 771).

Besides variation within some of the maroon populations, Amadon's (1942) distinguishing characters show some clinal variation. With regard to size, the birds from Vanualevu, Gau and 'Eua are the largest; those from Kioa and Koro show slight tendencies towards the smallest form, *taviunensis*. Regarding the blue nuchal collar, the birds from Koro are closest to the Taveuni parrots, which have no nuchal collar; those from 'Eua and Gau are highly variable and may be classified as being intermediate between specimens from Taveuni and Vanualevu, the latter distinguished by well developed nuchal collars. Amadon (1942) attributed the variation in plumage characters in the specimens from 'Eua to human

introductions of parrots from different Fijian islands; but this assumption had been made as early as 1793 by Labillardiere (Layard 1876b: footnote p. 390). Layard argued that "its powers [of flight] are too limited; and not one representative of the genus is found anywhere among the islands" (1876c: 501), and that "it has been their [the Tongans'] custom to take tamed examples of *Platycercus* [*Prosopeia tabuensis*] . . . to Tonga for the purpose of periodically plucking their crimson feathers for ornamenting fans &c." (1876b: 390).

Specimens from Gau are indistinguishable from 'Eua Red Shining Parrots; Amadon (1942) considered that Gau's population had either developed its intermediate characters during a long period of isolation, or had resulted from introduction by man.

Trading with parrots, especially those having red feathers, was very common among island people. Bones of a parrot clearly referred to *Prosopeia* have been found at archaeological sites on Lakeba, Lau archipelago, Fiji (Best 1984), and as mentioned above, the populations on Koro and Kioa were possibly also effected by human interference. The Taveuni form is relatively distinct, though Taveuni and Vanualevu were never separated by more than 18 km; whereas the Koro, Gau and 'Eua birds, closely resembling those from Vanualevu, were separated from Vanualevu by at least 40 km of open sea during the Pleistocene and Holocene (Fig. 1). Character divergence from the source population is more likely to occur in a comparatively small population on a small island (e.g. Gau and Koro) rather than in a much larger population which, in addition, is much closer to the source island (Taveuni).

As a result, Red Shining Parrots from Taveuni and Qamea are sufficiently distinct to be given subspecific status within *tabuensis* (*Prosopeia tabuensis taviunensis*). The remaining *tabuensis* populations, however, should all be included under the nominate *P. tabuensis tabuensis*, because there are no unequivocally defining characters to separate *koroensis*, *atrogularis* and *taviunensis*. The specific name *tabuensis* which is used hereafter refers to these 3 subspecies.

Species limits in *Prosopeia*

On Vitilevu, *personata* and *splendens* have existed sympatrically since at least 1840 (the description of *splendens* was based on specimens from Vitilevu—Peale 1948). The latter has always been regarded as having been introduced into Vitilevu (Amadon 1942, Watling 1978, 1982), but this assumption has no traceable origin and is unproven. If *splendens* was indeed introduced into Vitilevu by Fijians, it must have occurred prior to the first visits of Europeans, because *splendens* was frequently seen by early authors (Layard 1875, Gräffe 1968), becoming rare after the turn of the century (Bahr 1912), and, although considered extinct by Clunie (1984), still occurs in low numbers on Vitilevu (Watling, pers. comm.).

Because there are neither intermediate specimens in museum collections nor reports about hybrids from the wild sympatric populations of *personata* and *splendens*, these 2 can be regarded as distinct biological species. Although Amadon (1942) regarded *splendens* as a subspecies of *tabuensis*, considering that the distinction between the maroon of the *tabuensis* populations and the crimson of *splendens* was merely a matter of

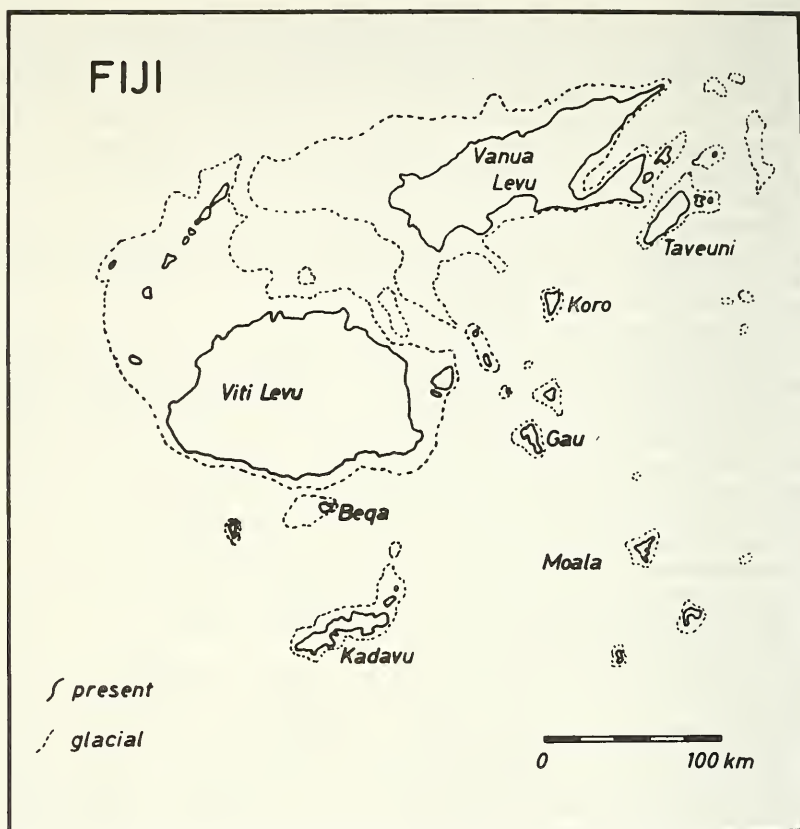


Figure 1. Pleistocene distributions of islands in the Fiji archipelago (after Watling 1982); Ovalau, Kioa and Qamea are the closest islands east of Vitilevu, Vanualevu and Taveuni respectively.

hue, he seemed not entirely satisfied with this opinion when he wrote: "It is possible that *splendens* would not interbreed with the maroon forms, just as it does not with *personata*. Unless this is not demonstrated in nature, *splendens* may continue to be considered a race of *tabuensis*" (1942: 9).

Potential reproductive isolation is the weak point in the biological species concept in its classical sense (but what else than a 'biological' species concept is the phylogenetic species concept?). Biogeographical evidence, as discussed below, strongly supports the opinion that *personata* and *tabuensis* are closely related phylogenetically, and that *splendens* was isolated from the *personata*/*tabuensis* stock at an earlier date. Corroboration is found in some characters of the external morphology, which are considered first.

A captive-bred hybrid ♀ *personata*/♂ *tabuensis* resembled *tabuensis* in almost all plumage characters, only lacking the blue nuchal collar, allowing the green colour of the back to extend onto the hindneck. Red appears to be a dominant colour. The phenotype of the hybrid strongly suggests that the colour of the head and breast plumage is controlled by a few gene loci.

Other characteristics support the opinion that *splendens* deserves specific status:

splendens lacks a dark facial mask. In *tabuensis*, the lores and the facial mask are blackish much like the dark face of *personata*;

tabuensis has green feather edges on the cheeks and the belly, whereas in *splendens* these feather areas are completely crimson;

all populations of *tabuensis* are maroon, whereas *splendens* is distinctively brighter coloured;

no intermediates have occurred on islands where individuals of both *splendens* and *tabuensis* have been introduced.

Strong evidence that *splendens* is specifically distinct also comes from the distributional pattern of birds within the Fijian archipelago, exemplified by the relatively isolated island of Kadavu. When compared with the other large islands of central Fiji, Kadavu's endemic and subspecific forms are illustrative:

Kadavu has endemic species of a honey-eater, *Foulehaio provocator*, a fantail, *Rhipidura personata* and a fruit-dove, *Ptilinopus layardi*, which are represented by only slightly different populations, *Foulehaio carunculata* and *Rhipidura spilodera*, on the other large islands of Fiji, and by *P. luteovirens* on Vitilevu, Ovalau, Koro, Gau and some smaller islands.

Some widespread species have well-marked subspecies on Kadavu (e.g. *Halcyon chloris*, *Myiagra vanicorensis* and *Petroica multicolor*), while populations of these species on the other large islands have not differentiated to a subspecies level.

Three forest-dwelling species (*Charmosyna amabilis*, *Gymnomyza viridis* and *Myiagra azureocapilla*) inhabit the 3 largest Fiji islands but do not occur on Kadavu, the fourth largest island in Fiji. There are no Fijian taxa which have representatives on most large islands, where those from Kadavu are closer to conspecifics or congeners from Vanualevu, Taveuni, Koro or Gau than to related forms from Vitilevu. Gene flow between populations on those islands, on which *P. tabuensis* occurs, and populations on Kadavu seems to be almost non-existent. Kadavu's isolation appears even more pronounced when considering glacial distributions of land in the Fiji archipelago. While Vitilevu and Vanualevu, as well as Vanualevu and Taveuni, were separated by channels of only a few kilometers during periods of glacial maxima, there were at least 40 km of open sea between Kadavu and Vitilevu during any period of the Pleistocene (Fig. 1).

If the geographical position of Kadavu within Fiji has resulted in distinctive forms thereon, even in those taxa which may be called 'super-tramps' (*sensu* Diamond 1974), e.g. *Halcyon chloris* and *Foulehaio*, or in species with good dispersal abilities such as *Myiagra vanikorensis*, how much more pronounced should be distinctiveness in weakly dispersing

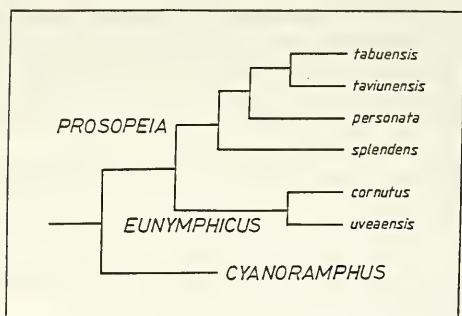


Figure 2. Phylogenetic relationships of south Pacific islands platycercine parrots.

taxa such as *Prosopeia*, resulting in almost complete isolation and the possible subsequent acquisition of specifically distinguishing characters.

On the other hand, there may have been geneflow between *Prosopeia* populations on Vitilevu and those on Vanualevu until the end of the latest glaciation, when a large lagoon between these 2 islands was connected with the open sea merely by 3 narrow channels (Fig. 1). Such sea barriers were possibly even shorter than indicated by iso-barythmic lines as a result of extensive stands of mangroves growing up, and these do form suitable habitats for non-breeding *Prosopeia* parrots (Bahr 1912, Clunie 1984).

Taxonomic conclusions

1. Reproductive isolation has developed in *personata* and *splendens*, which are therefore good biological species.

2. Similarities between *splendens* and *tabuensis* are superficial. Red colour in parrots is a factor which may spread easily in a parrot population once acquired, assuming it incurs no disadvantages related to predators.

3. Based on distributional analysis and some morphological characters, *tabuensis* (including *taviunensis*) is considered to be closer phylogenetically to *personata* than to *splendens*. The distinctive plumage characters may have been acquired after the last glaciation.

4. There will probably be no proof of reproductive isolation between *personata* and *tabuensis* in the wild. The importance of facial colouration and colour pattern in mate recognition in parrots, however, makes reproductive isolation (through ethological barriers) between these 2 forms highly probable.

Hence, the following taxonomic arrangement of the genus is proposed (see Fig. 2), with the distribution of the forms:

Prosopeia splendens, monotypic; Kadavu and Vitilevu

Prosopeia personata, monotypic; Vitilevu and, formerly, Ovalau

Prosopeia tabuensis with 2 subspecies:

Prosopeia tabuensis tabuensis; Vanualevu, Kioa, Koro, Gau and 'Eua

Prosopeia tabuensis taviunensis; Taveuni and Qamea.

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